

**REMARKS**

Claims 1-33 are pending in the current application. Claims 1, 16, 18, 22, 27, 28, 31 and 33 are independent claims.

**Allowable Subject Matter**

Initially, Applicant appreciates the Examiner's indication that claims 8-15 would be allowable if rewritten into independent form. In view of the remarks below, Applicant respectfully submits that all claims are allowable in their present form.

**Drawing Objections**

The drawings stand objected to because reference numerals contained in FIG. 2 are blackened out. By the present Amendment, Applicant has replaced originally filed FIG. 2 with replacement FIG. 2. Applicant submits that all reference numerals are legible in replacement FIG. 2. Applicant requests that the Examiner withdraw this objection.

**Claim Objections**

Claim 16 stands objected to for including a minor informality. By the present Amendment, the minor informality has been corrected. Accordingly, Applicant respectfully requests that the Examiner withdraw this objection.

**35 U.S.C. §102(e) Lau**

Claims 1-4, 6, 16-21 and 27 stand rejected under 35 U.S.C. §102(e) as being unpatentable over Lau (US 6690657). Applicant respectfully traverses this art grounds of rejection.

Lau is directed to a multi-channel distributed wireless repeater network. The repeater network of Lau is a “plug and play” network wherein low-powered repeaters are distributed throughout a desired coverage area, and each repeater receives a signal from a transmitter, or a re-transmitted signal from another repeater, channel-shifts the received signal to another channel and rebroadcasts the channel-shifted signal (See Column 4, lines 6-40 of Lau). Thus, the coverage area is inundated with the original transmission at different channels throughout the coverage area. Lau avoids the expected interference problems of such a distributed network by configuring each repeater to be relatively weak (See Column 4, lines 5-9 of Lau).

FIGS. 4 and 5 of Lau illustrates repeaters 68 and 78, and a number of transmit/receive (T/R) modules 62, 64, 70, 74 and 80. With regard to the functionality of repeaters 68 and 78, Lau states the following:

Repeaters 68 and 78 have a single task to perform: they receive signals on a first channel (CH1) and retransmit these signals on a second channel (CH2).  
*(Column 5, lines 32-33 of Lau)*

Thus, repeaters 68 and 78 receive signals on one particular channel, and re-transmit those received signals on another particular channel. The repeaters 68 and 78 are not configured to receive signals on “at least two bi-directional communication frequencies simultaneously” as recited in independent claim 1, for example. Rather, as discussed above, each of repeaters 68 and 78 tune only to one channel.

Further, the Examiner reads the “receiver” upon antenna 142 and duplexer 144 of FIG. 15, and refers to Column 8, lines 32-33. This section of Lau states “[r]epeater 140 incorporates an antenna 142 coupled to a duplexer 144 that allows simultaneous transmit and receive” (Column 8, lines 32-33). Applicant will now explain how this teaching of Lau is not relevant to

the “receiver” as presently claimed. As discussed above, the claimed “receiver” is capable of receiving signals on different bi-directional frequencies simultaneously. In other words, the claimed receiver can receive signals on different channels at the same time. Lau’s receiver, on the other hand, is disclosed as being capable of transmitting and receiving signals on different channels at the same time. The simultaneous transmitting/receiving of Lau is not the same as the simultaneous receiving/receiving of the claimed invention. In summation, the claims are directed to a receiver capable of receiving signals on two (or more) bi-directional frequencies, whereas Lau’s receiver is capable of receiving signals on only one frequency (i.e., CH1 as noted in Lau).

In view of the above remarks, Applicant respectfully submit that Lau cannot disclose or suggest “a receiver capable of receiving signals on said at least two bi-directional communication frequencies simultaneously” as recited in independent claim 1 and similarly recited in independent claims 16 and 18.

As such, claims 2-4, 6, 17 and 19-21, dependent upon independent claims 1, 16 and 18, respectively, are likewise allowable over Lau at least for the reasons given above with respect to independent claims 1, 16 and 18.

Regarding independent claim 27, claim 27 recites “an indicator for providing indication when received signal levels from at least one of the station devices are sufficient for communication between at least one of the first and second wireless station devices and the wireless coverage extension device”. The Examiner reads this limitation upon FIG. 15, particularly power detector 168, control circuit 166, control link 170 and a base station (not shown in FIG. 15) (See Page 15 of the Office Action). The control circuit 166 maintains a communication link (“control link 166”) with the base station (See Column 8, lines 51-53 of Lau). The base station configures the receive and transmit channels for each repeater in the

network based on information provided via the control link 170. The control circuit 166 reports channel power received at each test point (i.e., each receiver), and the base station configures the receive/transmit channels of the repeaters based on this information (See Column 9, lines 2-6).

Accordingly, the control circuit 166 reports channel power measured at one or more repeaters in the network via control link 170. However, this power measurement report is not an indication related to whether signal strength is sufficient for communication. If no signals related to communication are present, the control circuit 166 would still report the measured channel power (i.e., in this case, the measured interference) so that the base station can determine the base channels to assign to that repeater for future communication. The point of the measured channel power reporting is for the base station to determine which channels (e.g., CH1, CH2, etc.) have interference, and the base station will then presumably select channels without much interference to assign to that repeater. Indeed, Lau states “[c]ontrol link 170 ... can be used by the base station to schedule when a repeater should scan receive channels for interference sources” (See Column 8, lines 63-66 of Lau). Again, this scan could be performed even before any communication signals (other than noise) are even received at the repeater, and as such this scan cannot be said to be indicative of when received signal levels are sufficient for communication.

As such, Lau cannot disclose or suggest “an indicator for providing indication when received signal levels from at least one of the station devices are sufficient for communication between at least one of the first and second wireless station devices and the wireless coverage extension device” as recited in independent claim 27.

Applicant respectfully requests that the Examiner withdraw this rejection.

**35 U.S.C. §103(a) Lau in view of 2<sup>nd</sup> embodiment of Lau**

Claims 31-32 stand rejected under 35 U.S.C. §103(a) as being unpatentable over a first embodiment of Lau in view of a second embodiment of Lau. Applicant respectfully traverses this art grounds of rejection.

The Examiner seeks to combine different embodiments of Lau together to achieve independent claim 31.

Turning to Lau, the alleged second embodiment is discussed only briefly. Lau states that “[t]he critical added feature [of FIG. 17] is a delay element 238”. The only purpose for adding this delay element 238 given by Lau is that the delay 238 acts as “a buffer to store data received in one time slot for retransmission during the following time slot” (See Column 10, lines 16-17 of Lau). Thus, the delay element 238 is a buffer to delay transmission by a single time slot.

Further, the delay element 238 delays transmission by a single time slot after data is received. In contrast, independent claim 31 recites “the transmitter function being coupled to the delay function and activated based on detection of the signal by the detection function”. The transmission in Lau is not activated/triggered by signal detection, but is rather delayed by an additional buffer amount in the delay element 238 even after data is detected.

As such, claim 32, dependent upon independent claim 31, is likewise allowable over Lau in view of Lau at least for the reasons given above with respect to independent claim 31.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

**35 U.S.C. §103(a) Lau in view of 3<sup>rd</sup> embodiment of Lau**

Claims 33 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over a first embodiment of Lau in view of a second embodiment of Lau. Applicant respectfully traverses this art grounds of rejection.

Initially, Applicant respectfully submits that the 3<sup>rd</sup> embodiment of Lau is insufficient to cure the suggestion and disclosure deficiencies of the 1<sup>st</sup> embodiment of Lau discussed above with respect to independent claim 1. As such, claim 7, dependent upon independent claim 1, is allowable at least by virtue of its dependency upon independent claim 1.

Turning to the 3<sup>rd</sup> embodiment of Lau in more detail, the Examiner reads the claimed “wireless coverage extension device” upon repeater 68 of FIG. 4. As discussed above, with regard to the functionality of repeaters 68 and 78, Lau states the following:

Repeaters 68 and 78 have a single task to perform: they receive signals on a first channel (CH1) and retransmit these signals on a second channel (CH2).  
(Column 5, lines 32-33 of Lau)

Accordingly, repeater 68 has two uni-directional communication links (i.e., signal reception on CH1, and signal transmission on CH2), not two bi-directional communication links. A bi-directional communication link means that communication occurs in two directions. Lau is explicit regarding repeater 68 in that repeater 68 only receives signals on CH1, and only transmits signals on CH2. Accordingly, these links cannot properly be characterized as “bi-directional”.

As such, Applicant respectfully submits that Lau cannot disclose or suggest “a wireless coverage extension device” communicating over “a first bi-directional communication link” and “a second bi-directional communication link”.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

### 35 U.S.C. §103(a) Jin in view of Jin

Claims 23, 24 and 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over a first embodiment of Jin (US 6904266) in view of a second embodiment of Jin. Applicant respectfully traverses this art grounds of rejection.

Initially, Applicant notes that the Examiner has not provided reasons for rejecting independent claim 22. The Examiner has only provided remarks to claims 23, 24 and 26, dependent upon independent claim 22, and generally directed to the “repeater” portion of independent claim 22.

Jin is directed to a wireless enhancer using a switch matrix. Based on a review of Jin, Applicant respectfully submits that Jin fails to disclose or suggest “a repeater capable of communicating between said base unit and said client unit using the time division duplex protocol on one of said at least first or second bi-directional communication frequencies different from that used by said client unit” as recited in independent claim 22. As such, claims 23, 24 and 26, dependent upon independent claim 22, are likewise allowable over Jin at least by virtue of their dependency upon independent claim 22.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

**35 U.S.C. §103(a) Jin in view of Jin and further in view of Judd**

Claim 25 stands rejected under 35 U.S.C. §103(a) as being unpatentable over a first embodiment of Jin (US 6904266) in view of a second embodiment of Jin and further in view of Judd (US 2002/0177401). Applicant respectfully traverses this art grounds of rejection.

Initially, Applicant agrees with the Examiner in that the 1<sup>st</sup> embodiment of Jin in view of the 2<sup>nd</sup> embodiment of Jin fails to disclose “wherein the first and second antennas have largely orthogonal polarization” (See Page 24 of the Office Action). However, the Examiner alleges that Judd discloses this particular deficiency of Jin. Judd is directed to a repeater for customer premises. Even assuming for the sake of argument that Judd discloses this particular deficiency of Jin, Applicant respectfully submits that Judd is insufficient to cure the suggestion and

disclosure deficiencies of the 1<sup>st</sup> embodiment of Jin in view of the 2<sup>nd</sup> embodiment of Jin as discussed above with respect to independent claim 22. As such, claim 25, dependent upon independent claim 22, is likewise allowable over the 1<sup>st</sup> embodiment of Jin in view of the 2<sup>nd</sup> embodiment of Jin and further in view of Judd at least for the reasons set forth above with respect to independent claim 22.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

### **35 U.S.C. §103(a) Lau in view of Judd**

Claims 28-30 and 5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lau in view of Judd. Applicant respectfully traverses this art grounds of rejection.

Initially, Applicant respectfully submits that Judd is insufficient to cure the suggestion and disclosure deficiencies of the Lau reference as discussed above with respect to independent claim 1. As such, claim 5, dependent upon independent claim 1, is allowable at least by virtue of its dependency upon independent claim 1.

Turning to Lau, the Examiner reads the claimed “wireless coverage extension device” upon repeater 68 of FIG. 4. As discussed above, with regard to the functionality of repeaters 68 and 78, Lau states the following:

Repeaters 68 and 78 have a single task to perform: they receive signals on a first channel (CH1) and retransmit these signals on a second channel (CH2).

*(Column 5, lines 32-33 of Lau)*

Accordingly, repeater 68 has two uni-directional communication links (i.e., signal reception on CH1, and signal transmission on CH2), not two bi-directional communication links. A bi-directional communication link means that communication occurs in two directions. Lau is explicit regarding repeater 68 in that repeater 68 only receives signals on CH1, and only



transmits signals on CH2. Accordingly, these links cannot properly be characterized as “bi-directional”.

The Examiner combines Judd with Lau merely to compensate for Lau’s failure to disclose “orthogonal antennas”. However, even if the Examiner is correct regarding the teachings of Judd, Applicant submits that Judd fails to cure the suggestion and disclosure deficiencies of Lau as discussed above.

As such, Applicant respectfully submits that Lau in view of Judd cannot disclose or suggest “a wireless coverage extension device” communicating over “a first bi-directional communication link” and “a second bi-directional communication link” as recited in independent claim 28. As such, claims 29-30, dependent upon independent claim 28, are likewise allowable over Lau in view of Judd at least for the reasons set forth above with respect to independent claim 28.

Applicant respectfully requests that the Examiner withdraw this art grounds of rejection.

### CONCLUSION

In light of the amendments contained herein, Applicants submit that the application is in condition for allowance, for which early action is requested.

It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue, or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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